



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,555	06/26/2003	Thomas M. King	CS21662RL	5308

20280 7590 08/19/2005

MOTOROLA INC
600 NORTH US HIGHWAY 45
ROOM AS437
LIBERTYVILLE, IL 60048-5343

EXAMINER

ISSING, GREGORY C

ART UNIT	PAPER NUMBER
----------	--------------

3662

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,555

Applicant(s)

KING ET AL.

Examiner

Gregory C. Issing

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/14/05.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/26/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 3662

1. Applicant's election without traverse of Invention I in the reply filed on 6/14/05 is acknowledged.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The averaging of satellite orbital coefficients is insufficiently disclosed in the specification. It is further not clear how the averaging of orbital coefficients enables the derivation of relatively low resolution orbital information.

4. The disclosure is objected to because of the following informalities: paragraph [0052] is incomplete and fails to set forth a complete thought or teaching.

Appropriate correction is required.

5. The admitted prior art [0061] discloses the fact that during the normal course of operation, a GPS receiver receives a plurality of issues of ephemeris data for each of a plurality of satellites.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 3662

7. Claims 1, 3, and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Nelson, Jr. (6,016,117).

8. Nelson, Jr. discloses an efficient method for determining the orbital position of a GPS satellite wherein it is taught that there are several known techniques for reducing the computational load thereof including (1) interpolation, "for a given satellite, several samples are calculated . . . a polynomial curve is then numerically fitted to the samples . . . this curve allows positions between the samples to be determined through interpolation" (4:46-67), and (2) numerical integration. The initial samples of received GPS signals separated in time and determined via ICD-GPS-200 equations correspond to the claimed plurality of issues of ephemeris data for at least one satellite and the polynomial curve used to fit the samples and generate the interpolated signals corresponds to the derivation of relatively low-resolution satellite orbital information obtained from the corresponding plurality of issues of ephemeris data. Determination of satellite position and velocity as well as updating ephemeris data are inherent in a conventional GPS receiver.

9. Claim 1, 3, and 9-12 rejected under 35 U.S.C. 102(b) as being anticipated by King et al (6,211,819).

10. King et al disclose a method in a satellite position system receiver, as in Figures 5 and 6, wherein a base station receives ephemeris data and periodically calculates satellite position data, thus receiving a plurality of issues of ephemeris data, and calculates a set of curve fit coefficients describing satellite orbital parameters, particularly a second order curve fit, for use by a mobile communication unit. The curve fit is inherently relatively low resolution compared to the ephemeris data. Determination of satellite position and velocity as well as updating ephemeris data are inherent in a conventional GPS receiver.

11. Claims 1, 3-7, 11 and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by McMahan (6,437,735).

12. McMahan teaches the method substantially as claimed (7:39 – 9:65) in a GPS receiver (164) of receiving ephemeris data when the ephemeris data is available, converting the

Art Unit: 3662

ephemeris data to almanac data, which is a reduced-precision subset of the ephemeris data, and storing the almanac data at the receiver. The transformation of the ephemeris data to almanac data includes scaling, masking, and losing bits of information. As the mobile terminal is on for an extended period of time, it is inherent that plural issues of ephemeris data are received, as such is transmitted approximately every 30 seconds. As described in the specification (8:5-9), McMahan describes the embodiment of converting the ephemeris to reduced precision almanac data. McMahan also teaches the elimination of portions of the ephemeris data, including the elimination of the cosine and sine harmonic terms to the arguments of latitude (C_{uc} , C_{us}), orbital radius (C_{rc} , C_{rs}), and angle of inclination (C_{ic} , C_{is}), see Table in col. 8.

13. Claims 1, 3, and 6-12 are rejected under 35 U.S.C. 102(a/e) as being anticipated by Syrjarinne et al (6,424,890).

14. Syrjarinne et al disclose the claimed method in a satellite positioning receiver including receiving ephemeris data of a first satellite at a first sampling instant, receiving ephemeris of said first satellite at a second sampling instant, and constructing a polynomial of at least three degrees by choosing the coefficients of the polynomial such that the polynomial interpolates the satellite position and velocity at each of the sampling instants. The reception of the ephemeris at a first sampling instant and a second sampling instant meets the scope of the claimed receiving of a plurality of issues of ephemeris data, while the construction of the polynomial meets the scope of the deriving relatively low-resolution satellite orbital data, since all values are interpolated therefrom. The orbit is represented by a piecewise interpolation polynomial using a low degree polynomial for each piece of orbit (3:60-63).

15. Claims 1, 3-7, and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Diggelen et al (6,651,000).

16. Van Diggelen et al disclose a method for distributing satellite tracking data in a satellite positioning system wherein a network having a satellite receiver receives and collects ephemeris data from at least one satellite so as to produce trajectory data for each satellite during the collection period, a prediction of the future tracking data of each satellite and models that match

Art Unit: 3662

the future tracking data of each satellite (3:3-20). Additionally, Van Digglen et al teach formatting the tracking data as a compact model using a least squares fit (4:20-25), Kalman filter (20-28), by removing parameters from the model by setting some of the terms to zero, including the sine and cosine harmonic terms (4:44 – 5:28), or restricting the resolution (6:10-27).

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of McMahan or Van Diggelen et al in view of Rog et al.

McMahan and Van Diggelen et al teach the subject matter substantially as claimed as set forth above but fail to show the obtaining and deriving of satellite velocity information for the orbital information of the satellite, though orbital data would appear to assume there is motion and hence velocity. However, Rog et al specifically teach a method for determining the orbital positions and velocity of a satellite in a satellite radio navigation system including the determination of the position and velocity at a plurality of preset points spaced from each other in a selected time interval. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Van Diggelen et al by incorporating the use of satellite velocity information in the description of the satellite orbital information in order to account for the motion of the satellite in view of the teachings of Rog et al.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kyrtos (5,430,657) discloses a method and apparatus for predicting the position of a satellite in a satellite navigation system wherein plural determinations of position of a particular satellite at a plurality of respective times are used to derive a low-resolution satellite orbital data for the satellite. The plural positions of the satellite are determined using navigation signals from

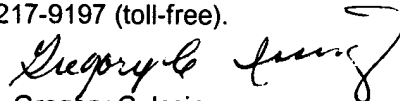
Art Unit: 3662

the satellites by computing a pseudorange and velocity at each of the times but do not utilize the ephemeris data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (571)-272-6973. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Gregory C. Issing
Primary Examiner
Art Unit 3662

gci